CONCEPT MATURATION THOUGHTS

John DeFoor
USJFCOM
john.defoor@je.jfcom.mil

DRAFT WORKING PAPER – EARLY THOUGHTS

Agenda

Purpose

- **Establish framework for concept maturation**

Outline

- **Proposed Version Definitions**
- **Proposed generic baseline experimentation campaign**

Desired end state

- **Generic baseline concept experimentation campaign that can serve as the starting point for specific concept experimentation campaign planning**

DRAFT WORKING PAPER – EARLY THOUGHTS

Agenda

Purpose

- Establish framework for concept maturation

Outline

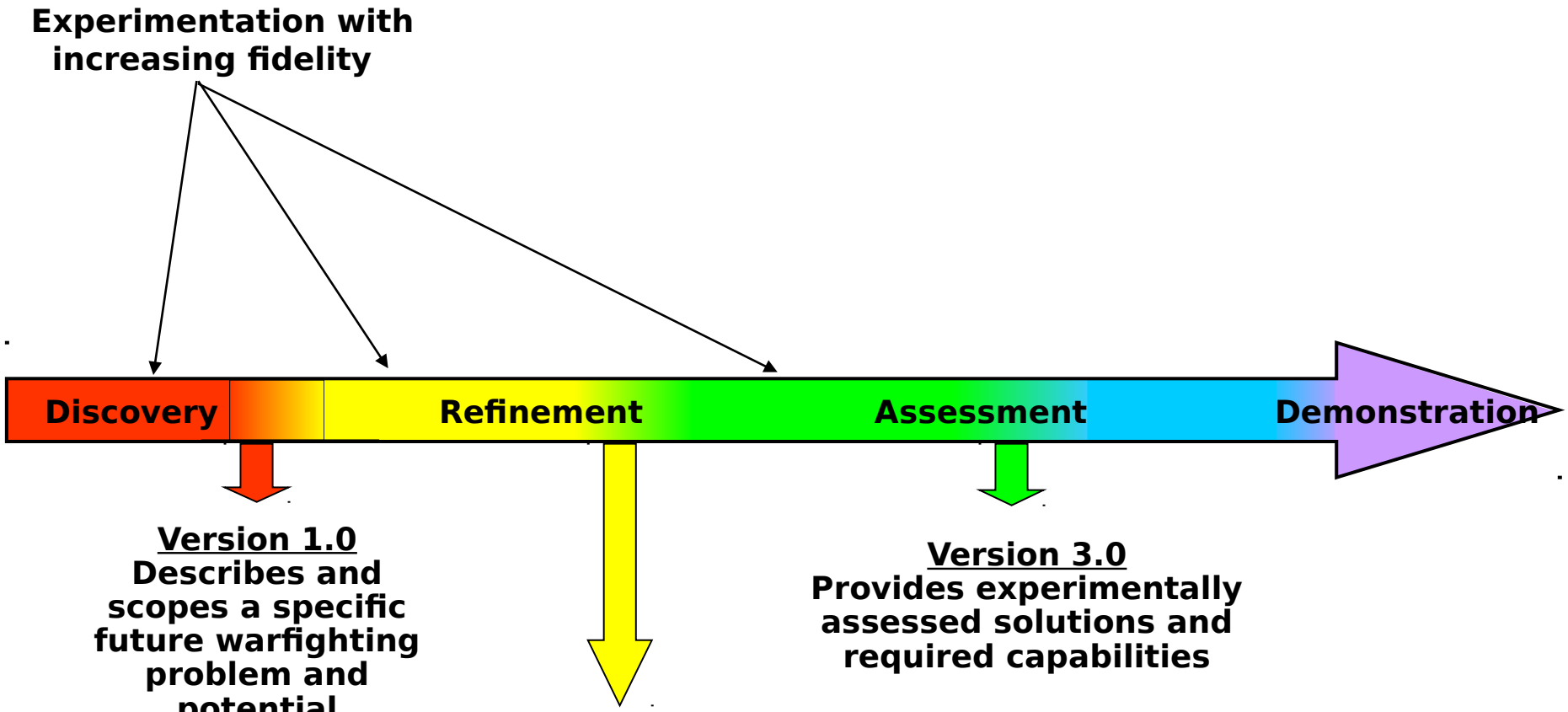
- **Proposed Version Definitions**
- Proposed generic baseline experimentation campaign

Desired end state

- Generic baseline concept experimentation campaign that can serve as the starting point for specific concept experimentation campaign planning

DRAFT WORKING PAPER – EARLY THOUGHTS

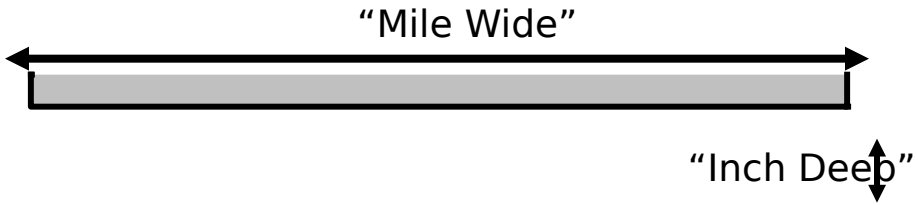
Overview of proposed framework


Experimentation with increasing fidelity
Discovery
Refinement
Assessment
Demonstration
Version 1.0
Describes and scopes a specific future warfighting problem and potential (hypothetical) solutions
"How can I do it…"
Version 2.0
Presents an experimentally refined solution set to the identified warfighting problem. Also, sets conditions for follow-on high fidelity experimental assessment.
"Work in progress"
Version 3.0
Provides experimentally assessed solutions and required capabilities

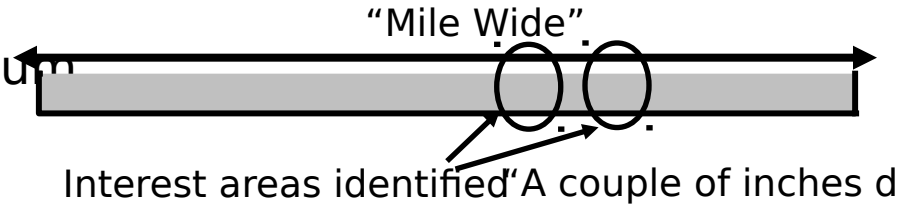
DRAFT "WORKING PAPER" – EARLY THOUGHTS

Another way to look at it...

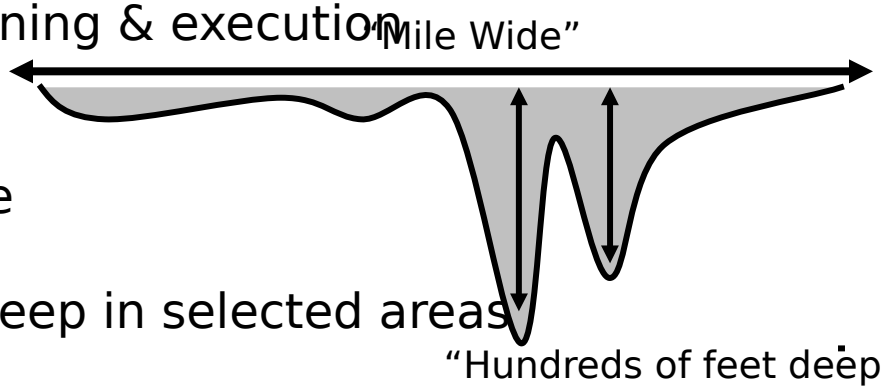
Discovery:
- Leverage SMEs
- Tackle broad complex topics
- Inform future experimentation
  - Emerging insights
  - Discuss potential metrics
- Format supports high OPTEMPO
- Inch deep and a mile wide (for good reason)



Refinement:
- Expose potential solution to medium fidelity experimentation
- Identify interesting focus areas
- Set conditions for high fidelity experimentation



Assessment:
- Requires increased deliberate planning & execution
  - M&S (Confidence Level)
  - Metrics
  - Commitment of time / resource
- Format limited by OPTEMPO
- Mile wide and a hundreds of feet deep in selected areas



Version 1.0

Describes and scopes a specific future warfighting problem and potential solutions

- **Purpose:**
  - **Identification of novel systems, concepts, organizational structures, and technologies as potential solutions to specified warfighting problems***
  - **Provide a framework for Actionable Recommendations, Functional Concepts, and Transformation Roadmaps**
  - **Provide a conceptual and capabilities framework for further concept refinement and higher fidelity experimentation in support of concept refinement and assessment**

- **Includes:**
  - **Description of the operational environment**
  - **Identification of future military problem to be solved**
  - **Potential solutions (hypotheses)**
  - **Required tasks**
  - **Required capabilities**
  - **Proposed metrics and attributes**
  - **Example of ideas in action**

- **Derivation:**
  - **Informed by discovery events, lessons learned from current and recent real world ops, and historical analysis**
  - **Discovery events typically conducted at a low level of fidelity (seminars, table top wargames, others)**
  - **Staffing of ideas across the Joint community**

* This idea and many others throughout this brief come from the Code of Best Practice for Experimentation

Version 2.0

Presents an experimentally refined solution set to the identified warfighting problem. Also, sets conditions for follow-on high fidelity experimental assessment.

- **Purpose:**
  - **Determine the potential value and feasibility of the hypothetical solutions.**
  - **Support the development of actionable recommendations and transformation change packages through experimentally refined hypotheses**
  - **Provide experimentally refined capabilities in support of Functional Concept and Transformation Roadmap development**
  - **Set the stage for follow-on high fidelity assessment experimentation**

- **Includes:**
  - **Same as v1.0, plus:**
  - **Detailed predictions of cause and effect relationships between the identified military problem, proposed solution, and required capabilities (with metrics)**
  - **Preliminary identification of how to achieve required capabilities (needed to support M&S use in experiments)**
  - **Experimentally refined metrics and attributes**
  - **Associated CONOPS for specific scenario(s)**

- **Derivation:**
  - **Informed by refinement experimentation, lessons learned from current and recent real world ops, and historical analysis**
  - **Refinement experimentation is typically conducted at a medium level of fidelity (M&S supported wargames…)**
  - **Refinement of “good” ideas in v1.0, elimination of “bad” ideas**

DRAFT WORKING PAPER – EARLY THOUGHTS

Version 3.0

Provides experimentally assessed solution and required capabilities

- **Purpose:**
  - Support the development of actionable recommendations and transformation change packages through experimentally assessed cause and effect relationships between military problems and identified capabilities
  - Identify high value potential prototype efforts
  - Provide experimentally assessed capabilities in support of Functional Concept and Transformation Roadmap development

- **Includes:**
  - Same as v1.0, plus:
  - Experimentally assessed statements of cause and effect relationships between the identified military problem, proposed solution, and required capabilities (with metrics)
  - Refined identification of how to achieve required capabilities
  - The resolution and details needed to immediately start prototyping effort, if directed
  - Associated CONOPS for specific scenario(s)

- **Derivation:**
  - Informed by assessment experimentation, lessons learned from recent and current real world ops, and historical analysis
  - Assessment experimentation is typically conducted at a high level of fidelity (lab settings, field experiments…) to explore alternative cause and effect patterns and sets of limiting conditions

DRAFT WORKING PAPER – EARLY THOUGHTS

Agenda

Purpose

- Establish framework for concept maturation

Outline

- Proposed Version Definitions
- **Proposed generic baseline experimentation campaign**

Desired end state

- Generic baseline concept experimentation campaign that can serve as the starting point for specific concept experimentation campaign planning

DRAFT WORKING PAPER – EARLY THOUGHTS

Available means:

Our portfolio of available venues includes:

- Co-sponsored wargames
- Other wargames (Large and Small)
- Workshops (Large and Small)
- Small Constructive Experiments*
- Small Virtual Experiments*
- Other

* New terms defined on next slide

Needed additions to our portfolio of means:

Assumption: In order to get to focused looks at concept sub-components, we need access to easily iterated high fidelity venues:

Small Constructive Experiments

- A (roughly) one month constructive M&S based analytical effort
- Scoped to investigate causality at the sub-concept level (for example between one military task and two or three required capabilities)
- Where the issue to be investigated is largely mechanistic

- Small Virtual Experiments

- A (roughly) one month M&S supported Virtual (synthetic environment) effort
- Scoped to investigate causality at the sub-concept level (for example between one military task and two or three required capabilities)

Assumptions

- Collaboration across extended Joint community (OSD, JS, CCs, Services, Agencies, IA, MN…)

- Concept development through experimentation

- Look first to existing experimentation opportunities

- Fill in gaps and conduct integrating efforts with dedicated events

- Cannot afford experimentation campaigns dedicated to single concepts. Must share experimentation resources across concepts.

- Elements of a concept may be in different experimentation phases. For example, in FY05 the bulk of MCO will be in hypothesis experimentation. However, it is likely that some elements will need more discovery work while other elements may be ready for transition for prototyping.

Backwards planning from Quarter when Concept Version is due

What activities are required to get to a Version 1.0?

QX-3	QX-2	QX-1	QX
Team Standup, Basic research, networking	WS(S)	WS(S)	WS(L) Deliver v1.0

What activities are required to get to a Version 2.0?

QX-3	QX-2	QX-1	QX
WS(S), SCE	WS(S), WG(S)	SCE, SVE	WS(L) Deliver v2.0
Play in a least one Co-Sponsored Wargame			

What activities are required to get to a Version 3.0?

QX-3	QX-2	QX-1	QX
WS(S), SCE	SCE, WS(S), SVE	SCE, WS(S), SVE	WG(L), WS(L) Deliver v3.0
Plus, export as much work as possible (Battlelabs…)			

Networking = Finding equity holders, partners, leading minds, mentors, Centers of Excellence,…
WS(S) = Small Workshop
WS(L) = Large Workshop
WG(S) = Small Wargame
WG(L) = Large Wargame
SCE = Small Constructive Experiment
SVE = Small Virtual Experiment

Workshops: Any of the workshops, especially in route to v
be tabletop wargames

DRAFT WORKING PAPER – EARLY THOUGHTS

More resolution on the activities that are required to get to a Version 1.0

Two quarters before the 1.0 version is due, the concept team continues to collaborate with equity holders and experts. The workshop in this quarter will be used to pull the interested parties together and work on the appropriate task at this stage – perhaps language and definitions.

The 1.0 version is due this quarter. This large workshop will be used to bring the community together and report out on efforts to-date, the current status of the concept, and the way-ahead. This will be the final collaborative event before the v1.0 is sent forward.

QX-3	QX-2	QX-1	QX
Team Standup, Basic research, networking	WS(S)	WS(S)	WS(L) Deliver v1.0

Three quarters before the 1.0 version is due, the concept team is stood up and tasked. They start to find the equity holders and experts in the assigned concept areas and conduct basic research

One quarter before the 1.0 version is due, the concept team continues to collaborate with equity holders and experts. The workshop in this quarter will be used to pull the interested parties together and work on the appropriate task at this stage – perhaps working capability portfolios.

DRAFT WORKING PAPER – EARLY THOUGHTS

More resolution on the activities that are required to get to a Version 2.0

Two quarters before the 2.0 version is due, another planning workshop will be held. Also, a small wargame will be conducted to refine the proposed conceptual solution.

The 2.0 version is due this quarter. This large workshop will be used to bring the community together and report out on efforts to-date, the current status of the concept, and the way-ahead. This will be the final collaborative event before the v2.0 is sent forward.

Use a Co-Sponsored Event if possible

QX-3	QX-2	QX-1	QX
WS(S), SCE	WS(S), WG(S)	SCE, SVE	WS(L)
Play in a least one Co-Sponsored Wargame			Deliver v2.0

Three quarters before the 2.0 version is due a planning workshop will be held to sketch out the year's effort. Also, a small constructive experiment will be planned in order to be positioned to capitalize on expected early wins.

One quarter before the 2.0 version is due, results of the previous quarter's wargame will be used to update the concept. Also, a small constructive experiment and a small virtual experiment will be conducted to look at promising task/capability sets.

DRAFT WORKING PAPER – EARLY THOUGHTS

More resolution on the activities that are required to get to a Version 3.0

Two quarters before the 3.0 version is due, another planning workshop will be held. Also, a small constructive experiment and a small virtual experiment will be conducted to look at promising task/capability sets.

The 3.0 version is due this quarter. This large wargame will be used to bring all the pieces together and show that the proposed solution is effective as a whole.

Use a Co-Sponsored Event if possible

QX-3	QX-2	QX-1	QX
WS(S), SCE	SCE, WS(S), SVE	SCE, WS(S), SVE	WG(L), WS(L) Deliver v3.0

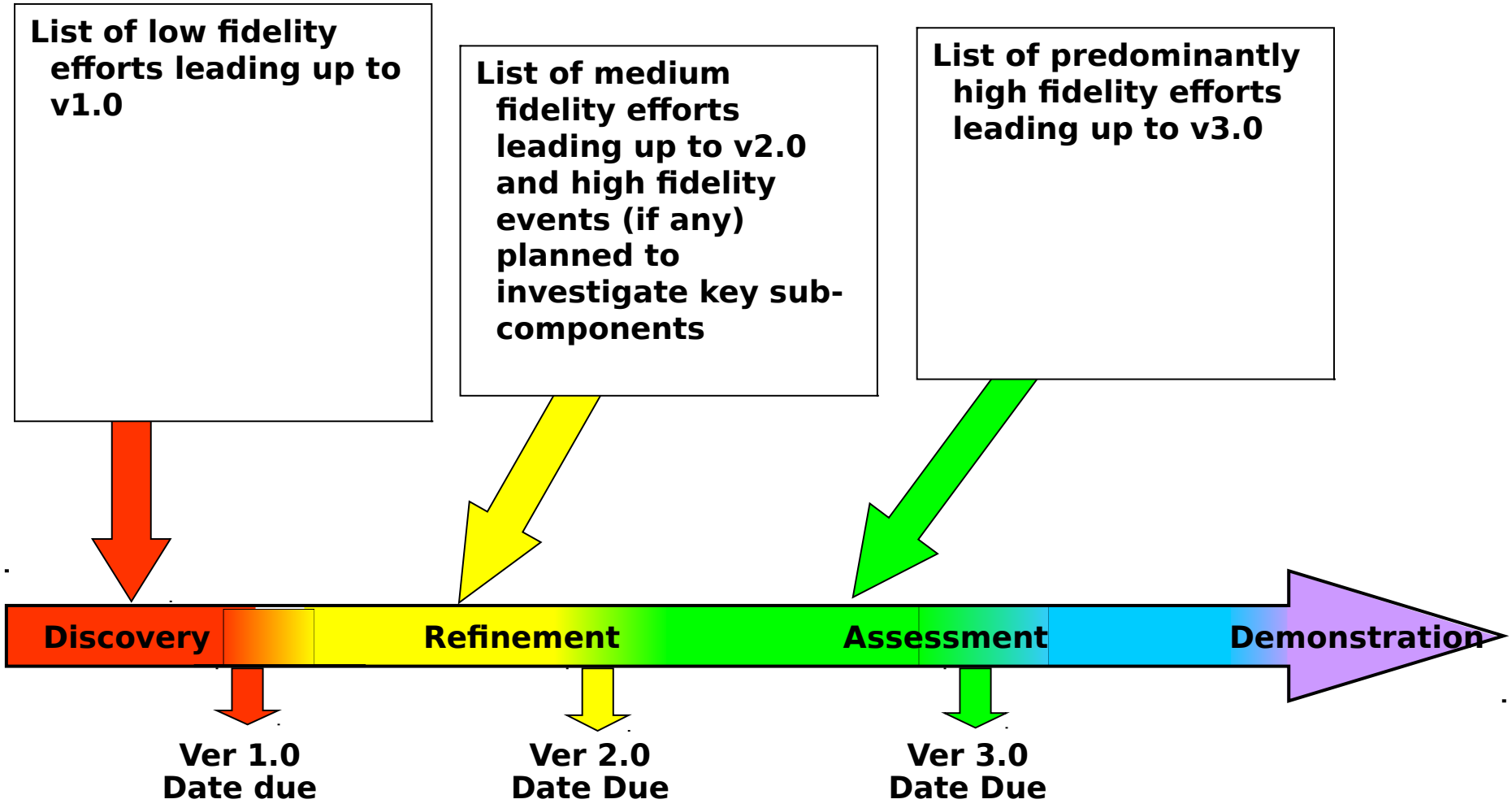
Plus, export as much work as possible (Battlelabs…)

Three quarters before the 3.0 version is due a planning workshop will be held to sketch out the year's effort. Also, a small constructive experiment will be planned in order to look at promising task/capability sets. The focus of the next three quarter's work is taking a high-fidelity look at the concept's various pieces

One quarter before the 3.0 version is due, again conduct a planning workshop and a small constructive experiment and a small virtual experiment to look at promising task/capability sets.

DRAFT WORKING PAPER – EARLY THOUGHTS

A big-picture overview could be shown as:


List of low fidelity efforts leading up to v1.0
List of medium fidelity efforts leading up to v2.0 and high fidelity events (if any) planned to investigate key sub-components
List of predominantly high fidelity efforts leading up to v3.0
Discovery
Refinement
Assessment
Demonstration
Ver 1.0 Date due
Ver 2.0 Date Due
Ver 3.0 Date Due

DRAFT WORKING PAPER – EARLY THOUGHTS

BACK UPS

From the Joint Operations Concept (JOpsC)

Joint Operating Concepts (JOCs) will further develop key areas of the JOpsC. Focusing at the operational-level, JOCs integrate functional and enabling concepts to describe how a JFC will plan, prepare, deploy, employ and sustain a joint force given a specific operation or combination of operations. The JOCs will also provide a detailed conceptual perspective for joint experimentation and assessment activities.

JOCs must be developed with a narrow scope to guide and describe the development of desired operational capabilities. These capabilities must be examined in terms of assumptions, attributes and metrics in order to identify tasks for the future Joint Force. JOCs must be written in measurable detail to allow for experimentation and let decision makers compare alternatives. JOCs must specifically address the potential means and ways they contribute to achieving the six 2001 QDR operational goals.

DRAFT WORKING PAPER – EARLY THOUGHTS

From the Strategic Planning Guidance

Future joint concepts will, at a minimum, contain:

- A theory of war that identifies the key variables determining success and incorporates the operational goals in the Defense Strategy (strengthening intelligence; protecting critical bases of operations; operating from the commons – space, international waters and airspace, cyberspace; projecting and sustaining forces in distant anti-access environments; denying enemies sanctuary; conducting network-centric operations; improving proficiencies for irregular warfare; and increasing capabilities of partners – international and domestic)

- Desired end-states and effects necessary to achieve the objective

- Descriptions of how operations will be conducted, articulated in terms of core military elements (sense, move, shoot, communicate, protect, sustain)

- Assessments of risks associated with the new concept and means for mitigating them

- Identification and prioritization of capabilities (not platforms, programs, or specific assets) required to achieve desired effects

DRAFT WORKING PAPER – EARLY THOUGHTS

DART WORKING PAPER 02-4 (December 2002)
A Practical Guide for Developing and Writing Military Concepts

Elements of Future Operating Concepts:

- **General. This section discusses the topics that a valid operating concept should specifically address.**
- **Purpose of the concept. Every future operating concept should begin with a statement of purpose which lays out the intended uses of the concept.**
- **Time horizon, assumptions and risks. A future operating concept should explicitly specify the future time period within which it is meant to apply. To the extent possible, a concept should explicitly identify any critical assumptions upon which the concept is dependent. Additionally to the extent possible, a concept should specify any identified risks so that these may be explored and addressed during continued concept development.**
- **Description of the military problem. In most basic terms, a future operating concept supposes a military problem and then proposes solutions to it. A future operating concept must therefore include a description of the military problem the concept is meant to solve.**
- **Synopsis of the central idea. The centerpiece of any future operating concept is a high-level description that encapsulates the "how" of the concept in a paragraph or two.**
- **Application and integration of military functions. An operating concept should include a description of how the various military functions, are applied and, importantly, how those capabilities are integrated per the concept into a cohesive operating system.**
- **Necessary capabilities. The concept should describe the capabilities that it is envisioned will be required to implement the concept successfully.**
- **Spatial and temporal dimensions. Military actions occur in time and space, and an operating concept should discuss these dimensions.**